

<b>Notice of Allowability</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/059,292	MAILLOT ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Kimbinh T. Nguyen	2628	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to amendment filed 04/18/06.
2. ☒ The allowed claim(s) is/are 1-24.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All    b) ☐ Some\*    c) ☐ None    of the:
  1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
  - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
    - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
  - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

- |   |  |
|---|--|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892)  | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                | 6. <input type="checkbox"/> Interview Summary (PTO-413),<br>Paper No./Mail Date _____. |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),<br>Paper No./Mail Date _____ | 7. <input type="checkbox"/> Examiner's Amendment/Comment                               |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit<br>of Biological Material          | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance   |
|   | 9. <input type="checkbox"/> Other _____.   |

## DETAILED ACTION

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 04/18/06 has been entered.

### ***Allowable Subject Matter***

2. Claims 1-24 are allowed.

The following is an examiner's statement of reasons for allowance:

Claims 1, 10-12, 14, 15, the prior art does not teach sub-sampling the surface at a higher rate or resolution than the rate or resolution of an original sampling of the surface using generated sample points; determining automatically sample points that add detail to the surface when displaced by a displacement map, the map being applicable to points of any arbitrary surface, by using a local criteria calculated based on displacements of neighboring sample points by the displacement map; and increasing automatically a resolution of the surface of the model by keeping the determined samples points and discarding other sample points.

Claim 13, the prior art does not teach generating 2D height maps for a subdivision surface by sampling a height field at a given resolution to calculate height values for points in the subdivision, the height field being applicable to points of any

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arbitrary surface; generating 2D feature maps, for the subdivision, that identify features of the height, by using the height map and height field to calculate approximate degrees and directions of local curvature.

Claim 18, the prior art does not teach identifying features in a local neighborhoods of points in a range, the range resulting from a displacement map applied to a domain comprising sample points of a given resolution or rate approximating the surface, the features comprising locations or directions of detail in the range of the displacement map, the map being applicable to points of any arbitrary surface; adjusting some points in the range; identifying borders of features in the range of the displacement map; making a displaced surface mesh by using the borders to constrain a triangulation of the adjusted points.

Claim 19, the prior art does not teach calculating height values for sample points in the distribution by sampling a height field, calculating feature metrics for respective sample points in the distribution by approximating second derivative of the points using height values of neighboring points in the distribution; refining the distribution of sample points by eliminating sample points from the distribution that have feature metrics indicating a respective locally flattish region of the height field, and by keeping non-eliminated sample points in the distribution.

Claim 23, the prior art does not teach calculating height values for points in the grid; calculating feature metrics for points in the grid by approximating second derivatives of the points using height values of neighboring points, calculating feature orientations for points in the grid by using height values, calculating the height values for

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new points in the triangle that are away from the points in the grid in the directions of the feature orientations, identifying new points that are near local extrema and features of the height field by approximating second derivatives of the new points using the height values of the new points.

Claim 24, the prior art does not teach creating a non-orthogonal coordinate system defining points on triangles; calculating a feature metric for points; calculating a feature orientation for points; for most points that have a feature orientation, sampling the height field at points uniformly distributed along a line segment within a neighborhood; relocating the point to a location of a closest sample point on the line segment that has a rate height change above a threshold, and adding points indicating an extrema or feature in the height field; creating a second set of triangles ; building a final displaced surface geometry using the second set of triangles.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kimbinh T. Nguyen whose telephone number is (571) 272-7644. The examiner can normally be reached on Monday to Thursday from 7:00 AM to 4:30 PM. The examiner can also be reached on alternate Friday from 7:00 AM to 3:30 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Razavi can be reached at (571) 272-7664. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

June 27, 2006



**KIMBINH T. NGUYEN**  
**PRIMARY EXAMINER**